CONCEPTUAL VERNAL POOL MITIGATION PLAN

FOR THE

RAMONA LIBRARY PROJECT
IN SAN DIEGO COUNTY, CALIFORNIA

PREPARED FOR:

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Acronyms and Abbreviations

10m	10-meter
BA	Biological Assessment
BMO	Biological Mitigation Ordinance
BO	Biological Opinion
CWA	Clean Water Act
dm^2	decimeter-squared
DGS	San Diego County Department of General Services
ECe	electrical conductivity
FESA	Federal Endangered Species Act
IHMP	Integrated Habitat Management Plan
m^2	meter-squared
RWQCB	Regional Water Quality Control Board
RPO	Resource Protection Ordinance
SAR	sodium adsorption ratio
SKR	Stephens' kangaroo rat
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1.0 Introduction

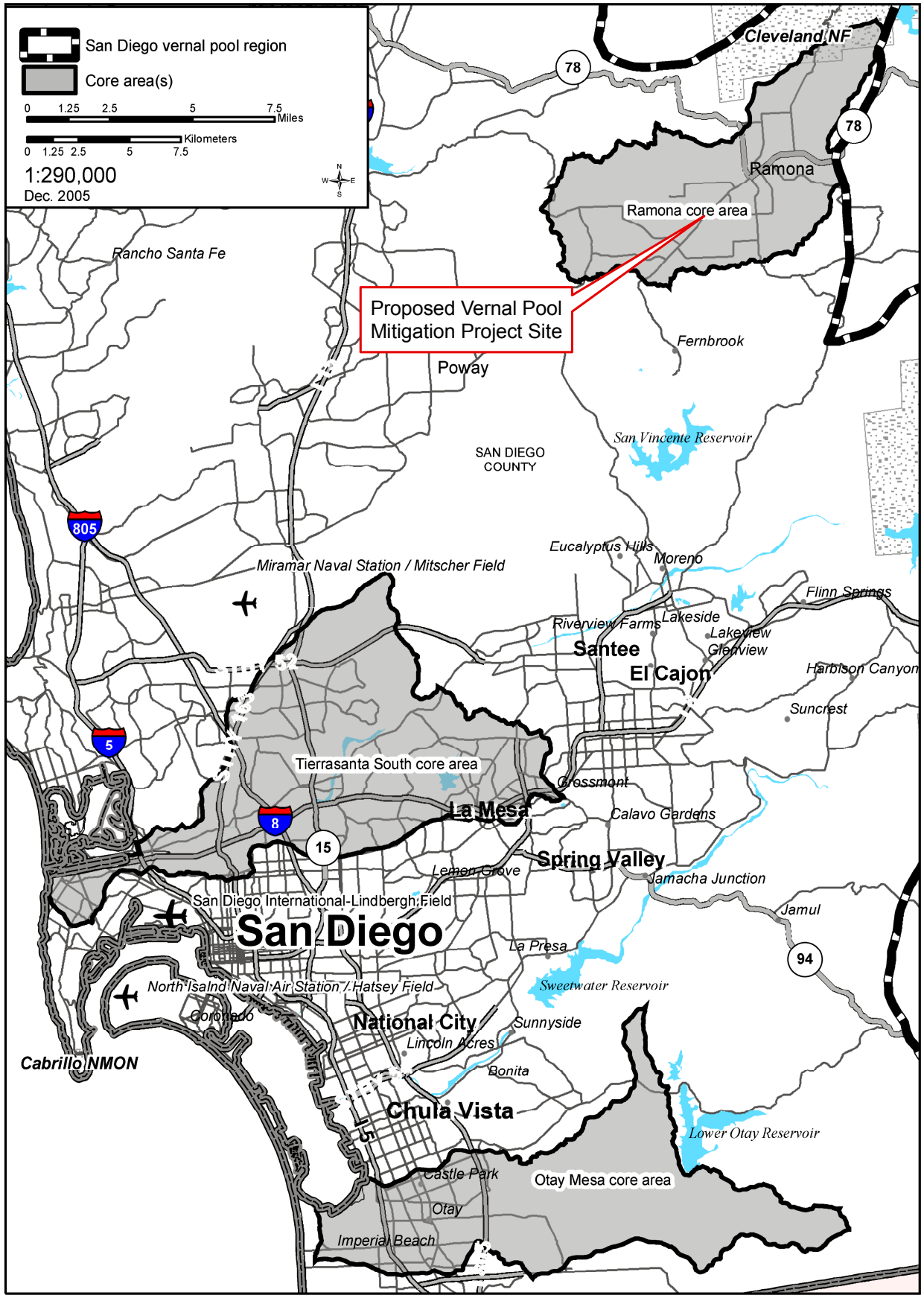
This Vernal Pool Conceptual Mitigation Plan has been prepared for the County of San Diego Department of General Services (DGS), which is proposing to develop a branch library on San Diego County owned land located near the northwest corner of Main Street and 13th Street in Ramona. The regional location of the proposed library project and the corresponding mitigation site are shown in Figure 1. Mitigation for impacts to vernal pools and fairy shrimp resulting from construction of the library would be completed offsite on County owned lands surrounding the Ramona Airport as shown in Figure 2.

The approximately 20,000 square foot public library would include a main building and approximately 65 parking spaces. The project will occur on six parcels that together encompass 7.32 acres. Additional areas on the proposed library site would be graded and dedicated to future public uses that would complement the proposed library and establish a Ramona Intergenerational Community Campus. These future facilities may include senior center or other healthcare or recreational facilities. The library site is fronted by Main Street to the south and is surrounded by commercial uses to the east and west, with the undeveloped floodplain of Santa Maria Creek to the north of the project site. The library project site has a history of previous disturbances by commercial operations including a uses as a rodeo grounds, grading and other historic commercial uses.

The majority of the library project site is dominated by non-native grassland and disturbed habitat as shown in Figure 3. However, a total of five existing vernal pools (pools 1 through 5) were identified on the project site through surveys performed by Merkel & Associates, Inc. in 2003 and HDR Engineering in 2008. Wet and dry season protocol surveys for the federally-listed endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*) were performed on pools 1,2 and 3 (Merkel 2003a,b) and fairy shrimp cysts were identified during the dry season surveys in pools 2 and 3. The presence of fairy shrimp was assumed in pools 4 and 5. Thus, the proposed library project would result in direct impacts to a total of 585.68 square feet of vernal pool habitat, 442.32 of which area occupied by fairy shrimp (TAIC 2008). The fairy shrimp were not identified to the species level, but were assumed to be San Diego fairy shrimp. The project would not result in direct impacts to any other federally- or state-listed threatened or endangered plant or wildlife species.

Impacts to the San Diego fairy shrimp (assumed to be present in the pools on the project site) will require an "incidental take" permit under the Federal Endangered Species Act (FESA) from the U.S. Fish and Wildlife Service (USFWS). The Ramona Branch Public Library Biological Assessment (BA) prepared by TAIC in 2008 identifies the County of San Diego DGS application for a Clean Water Act (CWA) Section 404 permit from the U.S. Army Corps of Engineers (USACE), under which the Section 7 consultation will occur and the issuance of a Biological Opinion (BO) from the USFWS is required.

The County of San Diego DGS proposes to mitigate for direct impacts to 0.01 acre of vernal pool habitat for the San Diego fairy shrimp by enhancing and creating a total of approximately 0.03 acre of vernal pool habitat and preserving 0.20 acre of non-native grassland at an off-site location as shown in Figure 2. ICF Jones & Stokes (2009) identified and surveyed a swale located within lands surrounding the Ramona Airport (this swale is different than the mitigation site proposed in the



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Source:USFWS 2005. Vernal Pool Recovery Plan for California and Southern Oregon.

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Figure 1
Regional Location of the Mitigation Site

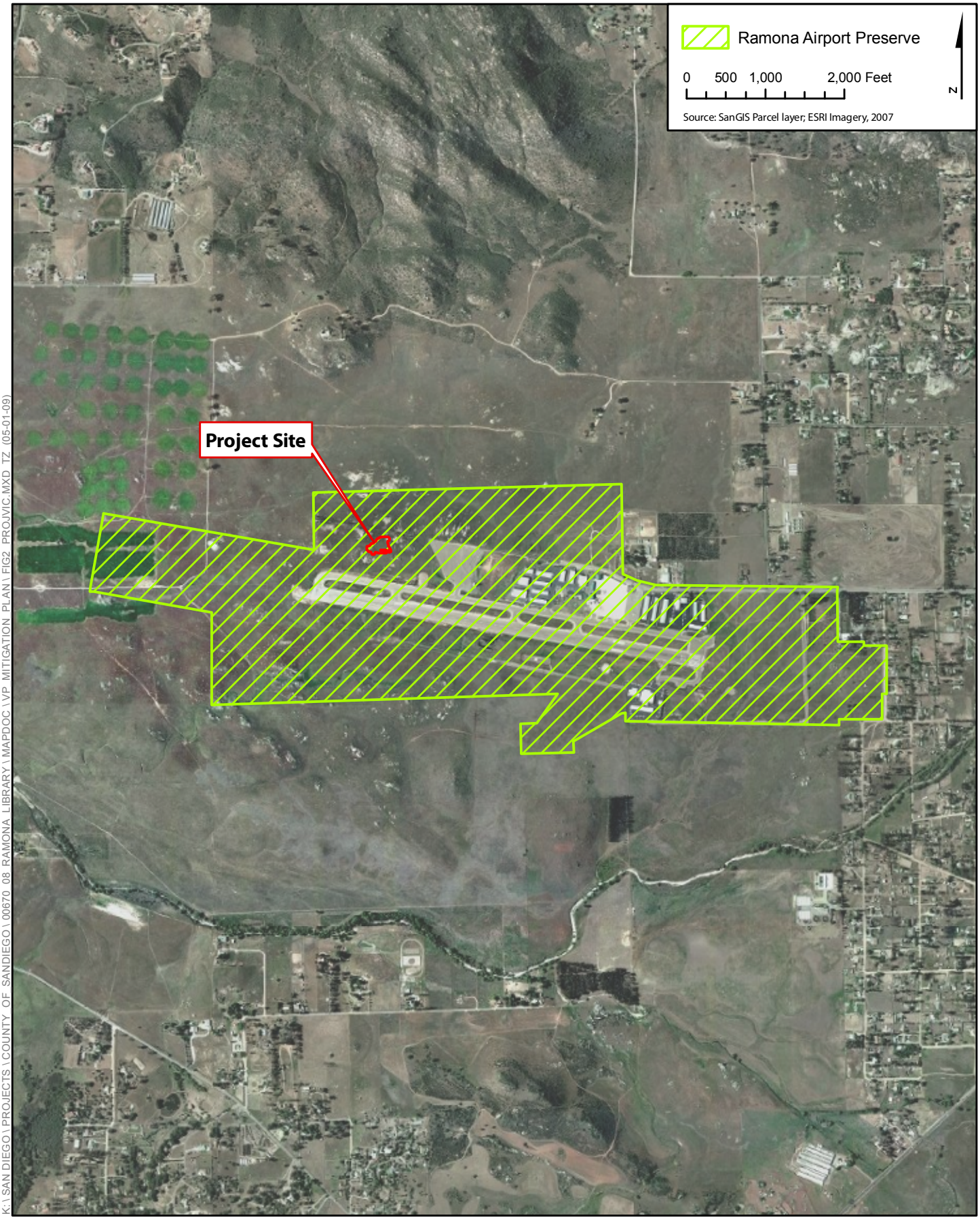

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Figure 2
Vicinity Location of the Mitigation Site

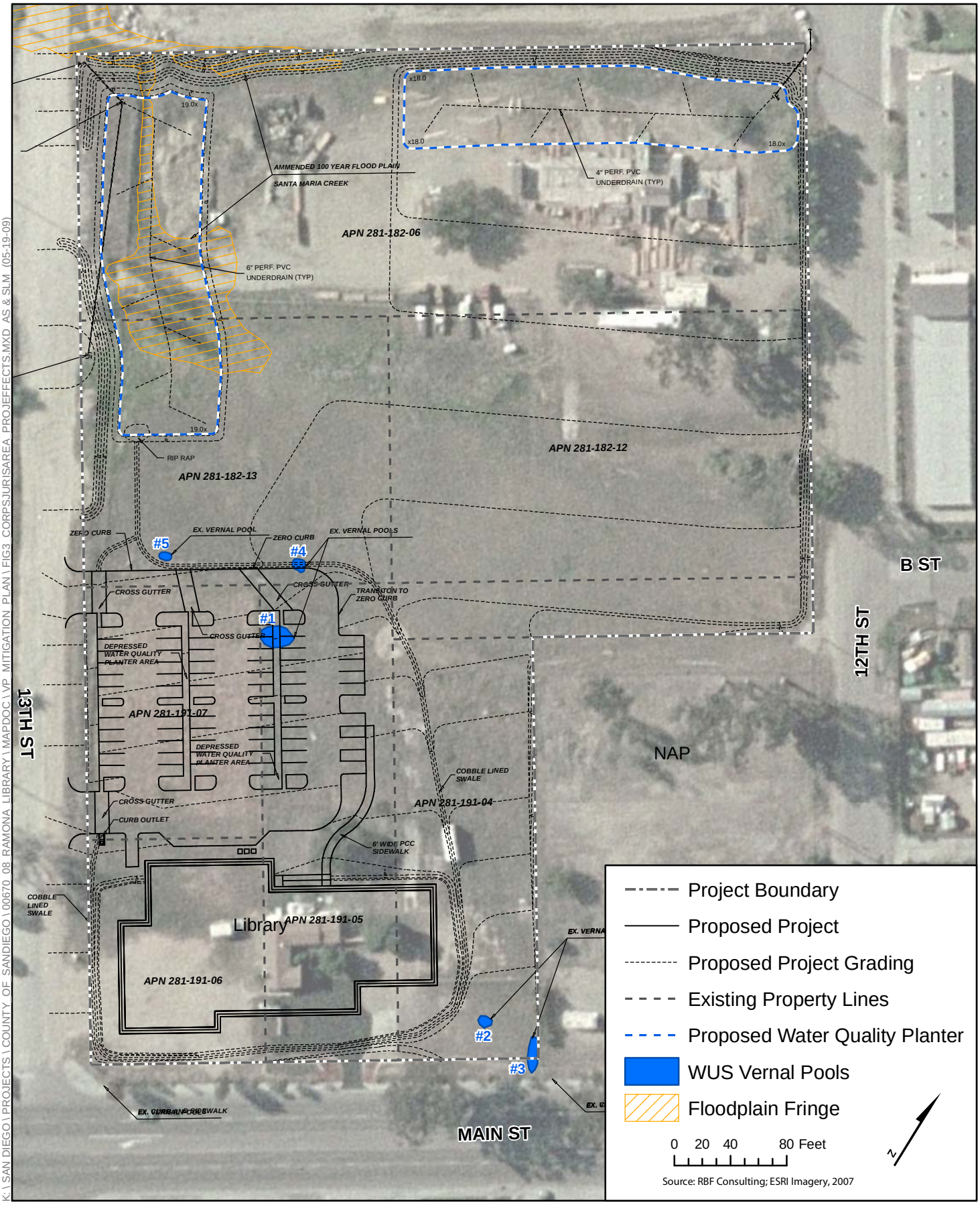

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Figure 3
Corps Jurisdictional Areas/Project Effects

project BA) that had not been mapped during the vernal pool surveys performed for the Ramona Airport Vernal Pool Habitat Management Plan (HMP, since finalized and combined with SKR plan as the IHMP). The proposed mitigation site is this existing swale that is vegetated with non-native grassland that will be enlarged and modified to provide a long, narrow linear shaped shallow seasonal swale/pool habitat typical of many of the vernal pools in the Ramona Airport area (County 2007). The selected swale occurs within a relatively large local watershed and has well developed Bonsanko/Fallbrook sandy loam soils that contain an extensive clay hardpan within the sub-surface soil profile (ICF 2009). The resource agencies including USACE and the Regional Water Quality Control Board (RWQCB) have inspected the proposed mitigation area identified by ICF Jones & Stokes in 2009, where the proposed mitigation will occur at a 3:1 ratio including 0.03 acre of vernal pool creation and enhancement and preservation of 0.20 acre of adjacent non-native grassland as shown in Figure 2.

This plan outlines the program to create a vernal pool within the Ramona Airport Preserve and enhance a portion of the associated upland watershed that would function as natural habitat in perpetuity. This Conceptual Vernal Pool Mitigation Plan for the Ramona Library Project has been prepared to be consistent with the Los Angeles District USACE mitigation plan format. All aspects of the vernal pool mitigation site creation, enhancement, maintenance, and management plans have been designed to be consistent with the USFWS approved Final Ramona Airport IHMP for management of vernal pools, spreading navarretia (*Navarretia fossalis*), San Diego fairy shrimp, Stephens' kangaroo rat (*Dipodomys stephensi*, SKR) and any other sensitive species that may occur within the Ramona Airport Property. Following successful completion of the mitigation, including five years of maintenance and monitoring, the mitigation site would be managed in perpetuity by DGS consistent with the IHMP for the Ramona Airport Preserve.

The Ramona Library Project Conceptual Vernal Pool mitigation plan includes:

1. Salvage, storage, and replanting of native plant propagules from selected existing pools to be impacted by the Ramona Library project.
2. Salvage and application of surface soils potentially containing fairy shrimp cysts from selected existing pools to be impacted by the Ramona Library project.
3. Identification of potential donor sites within the existing Ramona Airport Vernal Pool Preserve for collection of native plant seeds and/or fairy shrimp cysts (the donor materials would be seeded into the created vernal pool upon successful negotiation with the resource agencies).
4. Conceptual design guidelines outlining excavation and seeding methods for the creation of a vernal pool and enhancement of adjacent upland areas consistent with the Integrated Habitat Management Plan (IHMP) for the Ramona Airport.
5. Placement of a temporary barrier around the perimeter of the created vernal pool.
6. Establishment of success criteria and performance criteria for the vernal pool creation area.
7. A long-term vegetation management plan for the vernal pool and adjacent upland areas.
8. A long-term maintenance plan including potential remedial measures.
9. A long-term mitigation monitoring and reporting plan.
10. Management in perpetuity of the of the mitigation area by the County of San Diego Department of General Services per the terms of the IHMP.

11. Preparation of biddable construction documents for all aspects of this concept plan upon approval by the resource agencies.

1.1 Mitigation Goals

The primary goal of this plan is to replace the lost vegetation community and associated habitat and hydrologic functions of the vernal pools impacted by the Ramona Branch Library Project and satisfy the required FESA Section 7, CWA Section 404 and 401, and State Fish and Game Code Section 1602 permit requirements and conditions. Additional plan goals include achieving consistency with the IHMP for the Ramona Airport Preserve, County of San Diego MSCP Subarea Plan, Resource Protection Ordinance (RPO) and Biological Mitigation Ordinance (BMO).

The general goal of the vernal pool creation plan is to make site conditions in the mitigation area suitable so that they support the development of a persistent vernal pool habitat within an existing vegetated swale feature for the continued persistence of fairy shrimp. The general goal for the upland enhancement areas is to create cover that is dominated by native forb and grass species and that is congruent with the structure of the vegetation within the watershed of the pool. The upland vegetation in this region may provide habitat for SKR and other foraging wildlife.

1.2 Vegetation Communities to be Restored and Enhanced

This plan would create a San Diego grassland hardpan vernal pool on the Ramona Airport property. The majority of vernal pools south of the Ramona Airport are associated with Placentia soils, but many of the other pools in the Grasslands to the north are associated with Bonsall, Fallbrook, or Bosanko soils (County 2007). The proposed pool creation area occurs in a vegetated swale on Bonsall/Fallbrook Sandy Loam soils (mapped as Vista sandy loams by Bowman, 1973) that were identified on the project site through direct sampling in March 2009 (ICF Jones & Stokes, 2009a). This plan would create a persistent swale pool and an upland buffer composed of native grassland forb and grass species within upland habitat adjacent to the swale that is currently dominated by annual herbaceous weeds and non-native grasses.

1.3 Habitat Functions to be Created and Enhanced

The created vernal pool is intended to mitigate for the loss of the impacted vernal pools and their associated watersheds, and the mitigation plan provides a framework to create a similar physical setting with hydrologic and habitat functions similar to other San Diego grassland hardpan vernal pools in the Ramona Airport area. Habitat for fairy shrimp would be created in the preserve area.

The impacted vernal pools on the library project site are highly disturbed as discussed above, contain only one vernal pool indictor plant species and few native plant species, and are assumed to contain San Diego fairy shrimp cysts. Habitat functions of the vernal pool creation area and adjacent watershed would be augmented by transferring the vernal pool biota and indicator plants from pools to be lost on the library project site to the newly constructed swale pool on the airport property. In addition, when authorized by the resource agencies and the DGS, native plant seeds would be collected from potential existing donor pools on the preserve and used to seed the created vernal pool basin to provide for increased native species composition. Enhancement of the preserved upland habitat in the vernal pool mitigation area would be accomplished through reduction of exotic weed species and seeding of native grassland species cover.

1.4 Anticipated Time Lapse

The hydrology and plant species composition of the created San Diego grassland hardpan vernal pool should be similar to the hydrology and species composition of the vernal pools it would replace within a the first three years with average seasonal rainfall. Based on existing created and enhanced pools within the preserve, by the end of the five-year maintenance and monitoring period the enhanced upland should have achieved 50 percent native cover and it should be apparent whether the creation effort has resulted in the successful establishment of a functional vernal pool.

2.0 Proposed Vernal Pool Mitigation Site

2.1 Location and Size of Mitigation Area

The proposed mitigation area is located in the Santa Maria Valley in central San Diego County, approximately two miles west of the community of Ramona on the Ramona Airport property as shown in Figure 2. The proposed mitigation site occurs 300 feet north of the airport runway, 300 feet south of Montecito Road and approximately 1,000 feet northwest of the airport tower. The project area may be located on the USGS Ramona 7.5 minute quadrangle, in Township 13 South, Range 1 East, in Section 18. The project centroid occurs at approximately 33° 02' 30" North Latitude and 116° 55' 13" West Longitude. The project site occurs in the Ramona Airport Preserve, which was assembled in 2000 and is being managed for vernal pools, spreading navarretia, San Diego Fairy Shrimp, SKR and other sensitive species. The entire proposed project area and adjacent airport property are preserved as open space, owned and maintained by the County of San Diego DGS.

The proposed mitigation site is characterized by a broad, shallow vegetated swale surrounded by moderately rising hills to the east and north of the pool and relatively low-lying grassland to the east and south of the pool. This area is dominated by non-native grassland. The proposed vernal pool creation site and adjacent upland habitat enhancement area includes 0.23 acre of low-lying, relatively flat non-native grassland vegetation, and the local watershed for the proposed pool extends over 1.0 acre in size. The watershed is dominated by broad areas of non-native grassland, with large, clustered granitic rock outcrops and sparse stands of coastal sage scrub.

2.2 Mitigation Area Topography and Soils

The site topography varies from relatively flat on the valley bottom near the east and south boundaries of the watershed, to moderately sloping in the west and north portions of the watershed (approximately 10 to 15% slopes and low rises to 30 feet tall). The San Diego grassland hardpan vernal pool creation would occur in this relatively level portion of the site in areas outside existing vernal pools and their associated watersheds. Elevation of the site is approximately 1,400 feet above mean sea level AMSL on the valley bottom and rises to over 1,450 AMSL within the upper watershed area.

Composite soil samples were collected from the proposed vernal pool creation area and from the adjacent upland enhancement area by ICF Jones & Stokes in March 2009. The vernal pool creation area was augured to a depth of up to three feet in selected areas to determine the existing soil profile and compare this to soil mapping completed for the area (Bowman 1973) as shown in Figure 4. The soils observed at all four test boring locations did not match the soil profile for the mapped

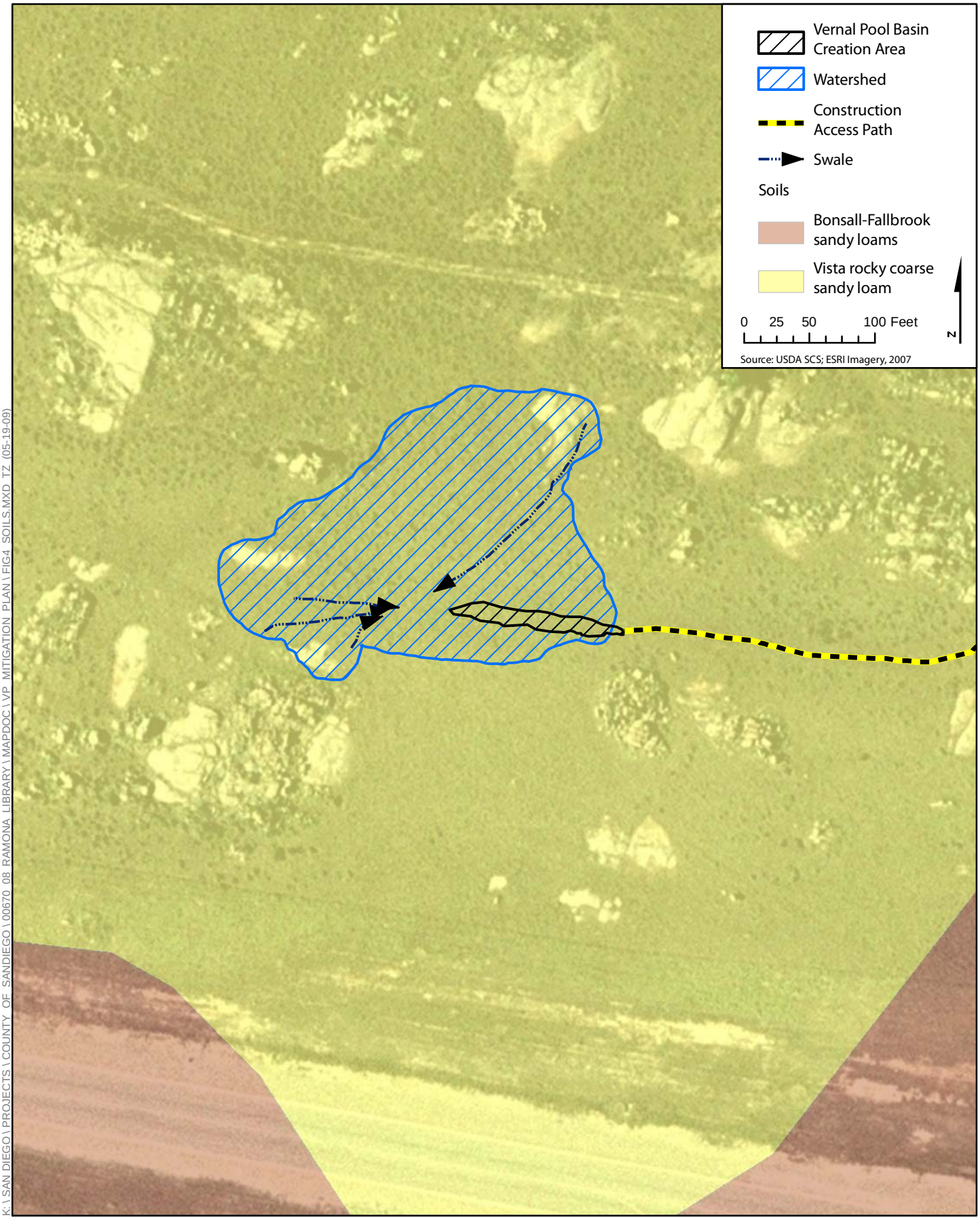

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Figure 4
Soils Mapped in the Mitigation Site Area

Vista soils but did closely match the profile description for the USDA Bonsall-Fallbrook sandy loams (Bowman 1973), which are generally characterized by a sandy loam overlying a hardpan of clay. A hard, impervious clay pan was observed underlying dark, coarse sandy loams at average depths between 18 and 24 inches throughout the proposed vernal pool basin creation area. These hardpan clays generally contained frequent redoximorphic features and calcium carbonate inclusions (typical of hydric soils) between 18 and 24 inches from the existing surface grade. The exception were areas generally within 10 to 15 feet of exposed bedrock and/or granitic bounder outcrops, where the soil profile overall was shallower (less than 16 inches) and dominated by loose sandy loam approximately 10 inches deep over a thin clay layer approximately two inches deep over decomposed granitic bedrock.

2.3 Existing Vegetation in Mitigation Area

The proposed vernal pool creation site is shown in Figure 5 and is dominated by dense cover of upland non-native grasses including Italian ryegrass (*Lolium multiflorum*), Mediterranean barley (*Hordeum marinum*), soft chess (*Bromus hordeuceus*), slender wild oat (*Avena barbata*), and hairy rat-tail fescue (*Vulpia myuros*), and non-native forbs including long-beak filaree (*Erodium botrys*), short-pod mustard (*Hirschfeldia incana*). These non-native species account for over 95 percent of the plant cover on the proposed creation and enhancement site and approximately 75 percent of plant cover in the immediate watershed of the pool as mapped by ICF Jones & Stokes in February 2009. In addition, several native forbs are present in the project area including red maids (*Calindrinia ciliata*), western ragweed (*Ambrosia psilostachya*), and tarweed (*Hemizonia fasciculatum*) as well as sparse areas of native grasses including salt-grass (*Distichlis spicata*). Several individuals of three wetland indicator plants were observed at the east end of the proposed vernal pool basin creation area including pale spike-sedge (*Eleocharis macrostachya*), an unidentified sedge (*Juncus* sp.– browsed) and curly dock (*Rumex crispus*). In addition, a single individual of the vernal pool indicator species grass poly (*Lythrum hyssopifolium*) was located during an initial visit to the site in February 2009. The surrounding watershed contains sparse stands of coastal sage scrub composed of deerweed (*Lotus scoparius*), flat-topped buckwheat (*Eriogonum fasciculatum*) and California sagebrush (*Artemisa californica*) surrounding the exposed bedrock and boulder outcrops, and dense areas of non-native grassland composed of the species shown above.

Little mousetail (*Myosurus minimus* ssp. *apus*) and the federally-listed threatened spreading navarretia (*Navarretia fossalis*) have been detected in the vernal pools in the Ramona area in prior years, but were not detected in the Preserve during field surveys in 2005 and 2006 (County 2007) or during the ICF Jones & Stokes field visits in February, March and April 2009. Several rare and sensitive native plant species are known to occur in the preserve area including southern tarplant (*Hemizonia parryi* var. *australis*), small-flower microseris (*Microseris douglasii* ssp. *platycarpha*), coast popcornflower (*Plagiobothrys undulatus*), and dwarf peppergrass (*Lepidium latipes*). No federally- or state-listed threatened or endangered, rare, endemic or otherwise sensitive plant species were observed within the proposed vernal pool creation area or watershed during site surveys in February, March and April 2009.

2.4 Existing Habitat Functions of Mitigation Area

The proposed mitigation area contains a complex of San Diego grassland hardpan vernal pools and non-native grassland, with patches of disturbed habitat. The mitigation area has a history of

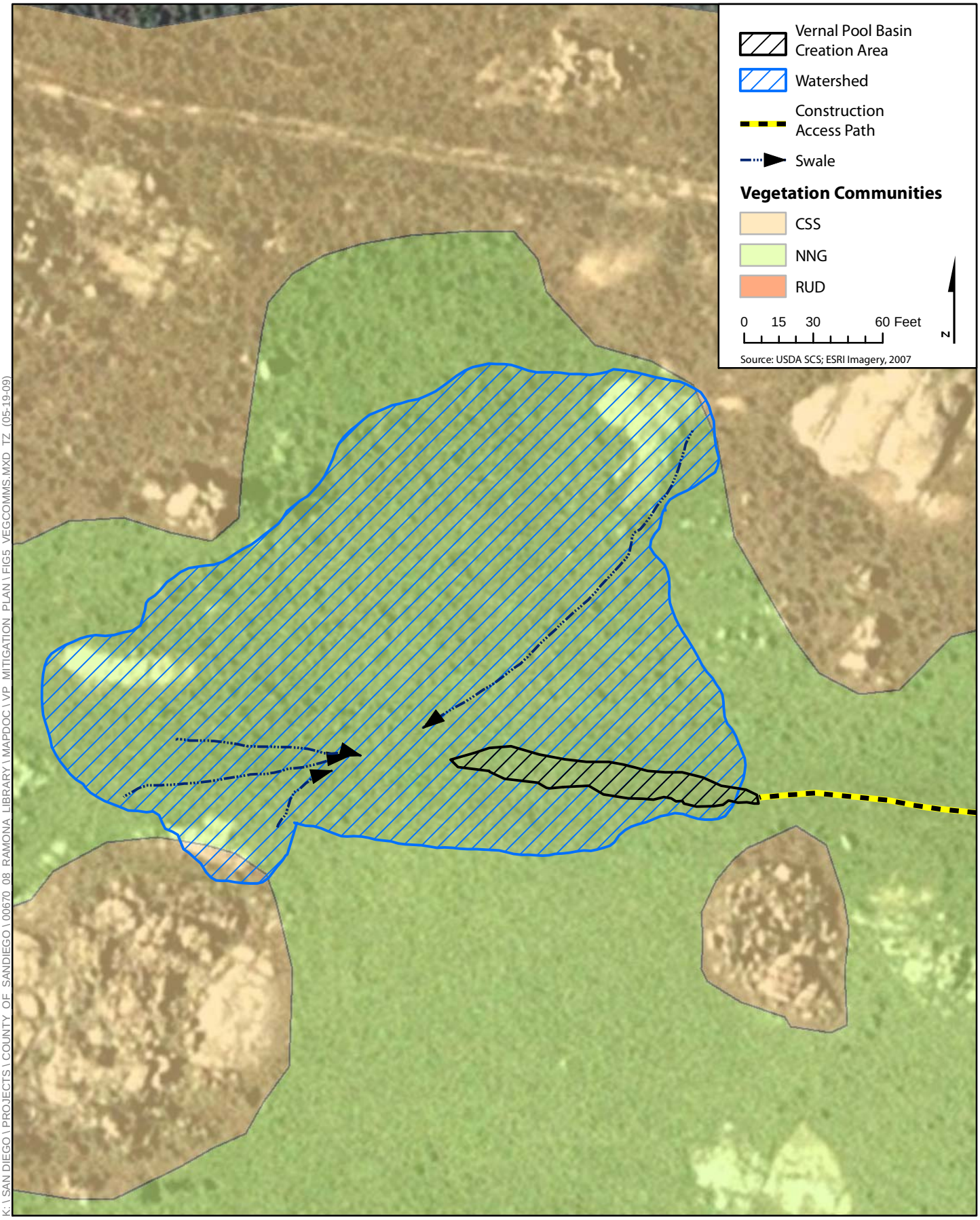

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Figure 5
Vegetation Communities in the Mitigation Site Area

agricultural uses prior to purchase and preservation by the County and its primary habitat function is as a preserve for vernal pools, fairy shrimp and SKR. The Ramona vernal pools are part of the Inland Valley Management Area of the Southern California recovery plan (USFWS 1998). The proposed vernal pool creation area and adjacent upland enhancement area occur within the SKR preserve portion of the Airport Property (FAA 2000), on areas mapped as potential SKR habitat and adjacent to areas supporting vernal pool habitat. Note that no SKR were trapped in the vicinity of the proposed vernal pool creation area or adjacent upland enhancement area during the 1997 trapping surveys, and no new burrows or other evidence of occupation were observed in or adjacent to the proposed creation or enhancement areas during the 1998/1999 update of the SKR habitat delineation (FAA 2000). SKR and western burrowing owl were identified approximately 500 feet west of the proposed project site, in areas of higher land located at the top of the watershed for the proposed vernal pool creation area during the 1997, 1998 and 1999 surveys and habitat delineations.

2.5 Existing and Proposed Uses of Mitigation Area

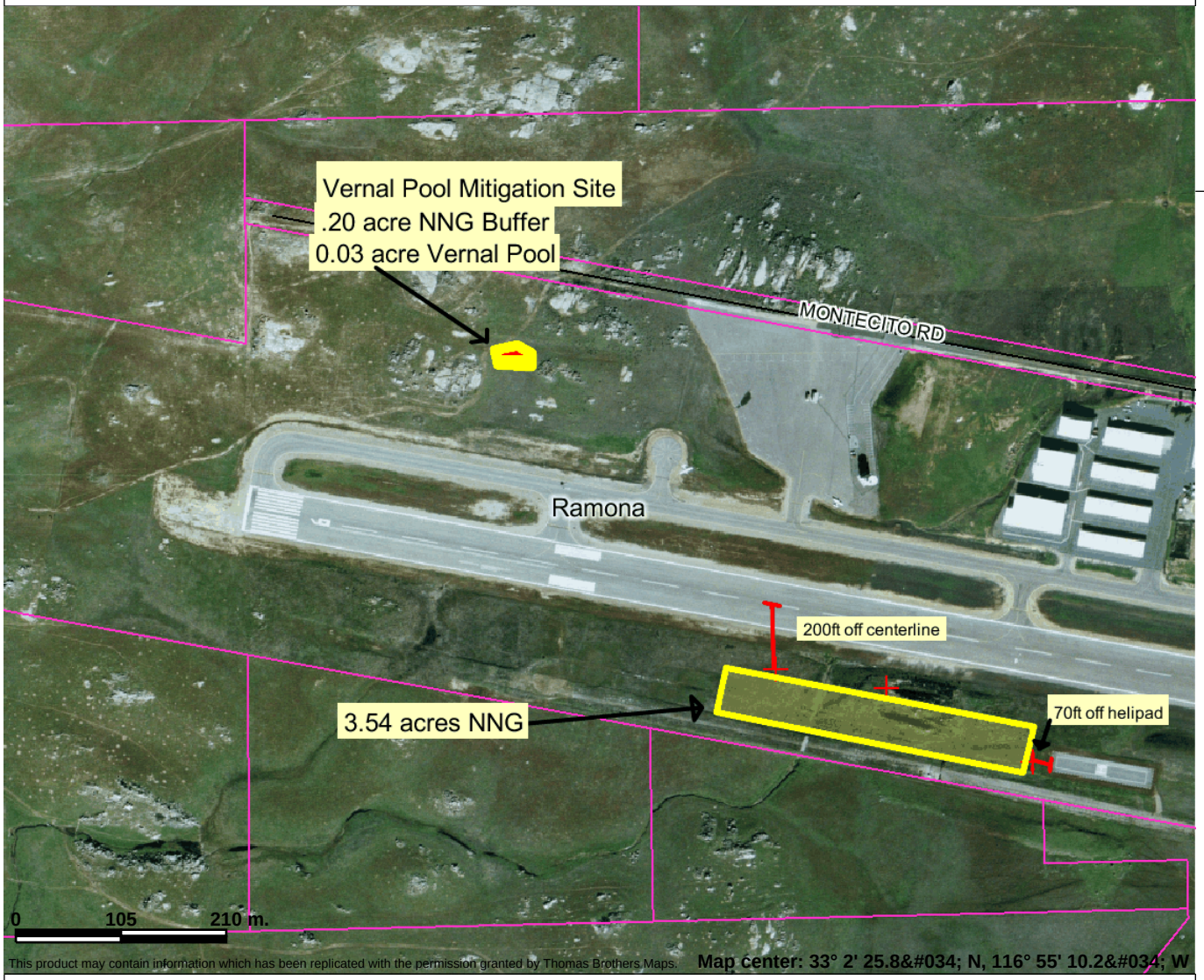
The proposed vernal pool creation area and a portion of the adjacent upland enhancement area (0.20 acre) occur within the SKR preserve portion of the Airport Property, on areas mapped as potential SKR habitat. The remaining 3.54 acres of non-native grassland occurs south of the airport runway and outside of the SKR preserve, as shown in Figure 6. As noted above, no SKR were observed in or adjacent to the proposed vernal pool creation area during the 1997 through 1999 trapping surveys and habitat delineations. The proposed vernal pool creation area occurs east of and outside the fenced boundary of the Fay Parcel (89-0010-A), which is a designated horse pasture with an annual grazing lease. The proposed vernal pool creation area is within a designated lease expansion area, but is not currently grazed and thus is not subject to the influences of annual grazing (FAA 2000).

If the proposed vernal pool creation and adjacent upland enhancement area are subjected to grazing in the future due to a grazing lease expansion, these activities are anticipated to potentially be consistent with the proposed long-term management of the vernal pool and its watershed. This assessment is based upon visual observation in 2009 of preserve areas containing pools that are currently subjected to annual grazing in the vicinity of the proposed pool creation site (e.g., pools K9, K10), as well as studies that indicate that grazing may support higher plant species diversity and greater prolonged soil moisture in ephemeral wetlands (Marty 2005). Many pools within the preserve have been fenced to prevent grazing disturbance; if it is determined through monitoring that exclusionary fencing to prevent grazing by horses is required, fencing consistent with the specifications in the IHMP will be installed/maintained around the proposed vernal pool creation area. The proposed vernal pool creation area occurs within and is consistent with the long-term Adaptive Management Program for SKR in the IHMP.

3.0 Final Success Criteria and Performance Standards

The success criteria described below are to be achieved during the five-year maintenance and monitoring period. Success criteria would not be considered to have been met until the established goals have been met, and the five-year maintenance and monitoring period has been successfully completed. Specific performance criteria are outlined in Section 6.1.

Ramona Library Proposed Mitigation



Legend

- Parcels with out labels
- Highways
- Freeways
- Streets
- Water Bodies
- Water Bodies
- Sponsor Groups
- Sponsor Groups
- Other
- Community Planning Area
- Community Planning Areas
- 2007 Orthophoto South West
- 2007 Orthophoto South East
- 2007 Orthophoto North West
- 2007 Orthophoto North East

Map center: 33° 2' 25.8" N, 116° 55' 10.2" W

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Source: County of San Diego, 2009

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Figure 6
Ramona Library Proposed Mitigation

3.1 Target Habitat Functions

The goal of the mitigation is to create a self-sustaining San Diego grassland hardpan vernal swale pool that exhibits species composition and seasonal hydrology exceeding the relatively low quality vernal pools to be replaced. Some of these vernal pools support the federally-listed endangered San Diego fairy shrimp. The mitigation program intends to create a new San Diego grassland hardpan vernal pool (and therefore habitat for fairy shrimp), and restore adjacent upland habitat with native Diegan coastal sage scrub forb and grass species. The surrounding preserve contains a series of intermixed Bonsall sandy loam soils in swales that support vernal pool species, and Fallbrook sandy loams on rises that provide potential SKR habitat (County 2007). The habitat to be created will support the San Diego fairy shrimp and a vernal pool indicator species in the swale and preserve or enhance potential SKR habitat in the adjacent uplands.

3.2 Target Hydrological Regime

The proposed mitigation site currently contains a low-lying vegetated swale. Grading and contouring the existing surface soils of the swale is anticipated to produce shallow ponding at minimum between one and three centimeters depth on saturated surface soils within the pool basin for approximately 15 to 20 days per year. The existing watershed for the proposed pool basin is sufficiently sized, with shallow bedrock and steep rises that direct runoff though well-defined channels, so dense thatch and cover of non-native grasses within the majority of the watershed is not anticipated to significantly limit available surface water after precipitation events for the created pool basin.

3.3 Target Vernal Pool Acreage

The mitigation program is based upon the Biological Assessment for the Ramona Library Project (TAIC 2008). The target mitigation acreage for the project is 0.03 acre of vernal pool habitat as shown in Table 1 below. To mitigate for impacts to the vernal pools on the library project site, the County of San Diego DGS has agreed to create/restore 0.03 acre of vernal pool habitat and preserve 0.20 acre of non-native grassland within the offsite mitigation location in the SKR preserve portion of the Ramona Airport property. The County has also agreed to mitigate for additional non-native grassland impacts by preserving 3.54 acres of non-native grassland outside of the SKR preserve and south of the airport runway as shown in Figure 6.

Table 1. Impacts, Required and Proposed Mitigation—Ramona Library Project

	Vernal Pool Area (Square Feet)	Vernal Pool Area (Acres)	Upland Area (Square Feet)	Upland Area (Acres)
Impacts—Ramona Library Project	442.3	0.01		
Required Creation/Restoration at 3:1 Ratio	436.0/939.0	0.03		
Proposed Creation/Restoration at 3:1 Ratio	0.0/1,327.0	0.03		
Proposed Upland Preservation/Enhancement			8,712.0	0.20

3.4 Rationale for Expecting Implementation Success

This mitigation plan is expected to be successful for the following reasons:

- The soil and hydrologic site conditions are appropriate for the creation of a vernal pool with minimal watershed modification. The pool will be constructed within an existing swale over intact Bonsall soils with a clay hardpan that is documented supporting vernal pools in other portions of the preserve, including some enhanced pools.
- The created pool will have donor fairy shrimp cysts for inoculation and plant materials for seeding. The vernal pools that would be lost due to project construction would have their biota and soil salvaged and placed in the newly created vernal pool.
- The watershed of the created pool occurs in a preserve and will be subjected to minimal disturbance, preserving subtle hydrologic connections to the created pool.
- The vernal pool will occur within the vicinity of existing, albeit disturbed pools planned for preservation. Successful restoration of vernal pools is increased when the pools to be created are located near existing pools (USFWS 1997). Placing new vernal pools adjacent to the existing vernal pools allows for the possibility of vernal pool species dispersal from the preserved vernal pools to the newly created vernal pools.

4.0 Mitigation Plan and Implementation Measures

This plan describes the implementation measures needed for creating a new vernal pool and enhancement of adjacent upland areas on the Ramona Airport Preserve.

4.1 Site Design and Construction Plans

4.1.1 Preliminary Design

The preliminary grading and seeding concept plan for the mitigation area is shown in Figure 7. This plan view of the mitigation project area illustrates the relative location, size and shape of the proposed vernal pool creation area and the portion of the adjacent upland watershed to be seeded and maintained. The proposed swale pool will occupy the low-lying swale portion of the project site and will be approximately 120 feet long, and vary from approximately 12 feet wide near the central portion of the pool to under 4 feet wide near the upstream and downstream extents of the pool. This pool area will be inoculated with fairy shrimp cysts and seeded with native plant propagules collected from the impact pools as well as approved donor pools within the preserve.

The upland to be maintained and seeded will include approximately 25 feet of non-native grassland surrounding the perimeter of the swale pool. Additional area will not be maintained to prevent impacts to adjacent boulder outcrops and coastal sage scrub and preserve the SKR habitat functions of these adjacent upland areas.

Cross sections of the swale pool will extend from the existing surface grade at the outside edges of the swale limits to approximately 12 inches (approximately 30 cm) at the deepest portion of the pool. In general, the majority of the pool will be no more than 6 to 8 inches (approximately 15 to 20 cm) below the existing surface grade. The pool edge will vary with the existing grade and the swale pool bottom will follow the existing subtle one to two percent downstream gradient from west to east. The existing low upland slope to the south of the pool will be enhanced with soil excavated from the swale pool bottom and seeded. Grading details will be refined for the final grading plan as described below.

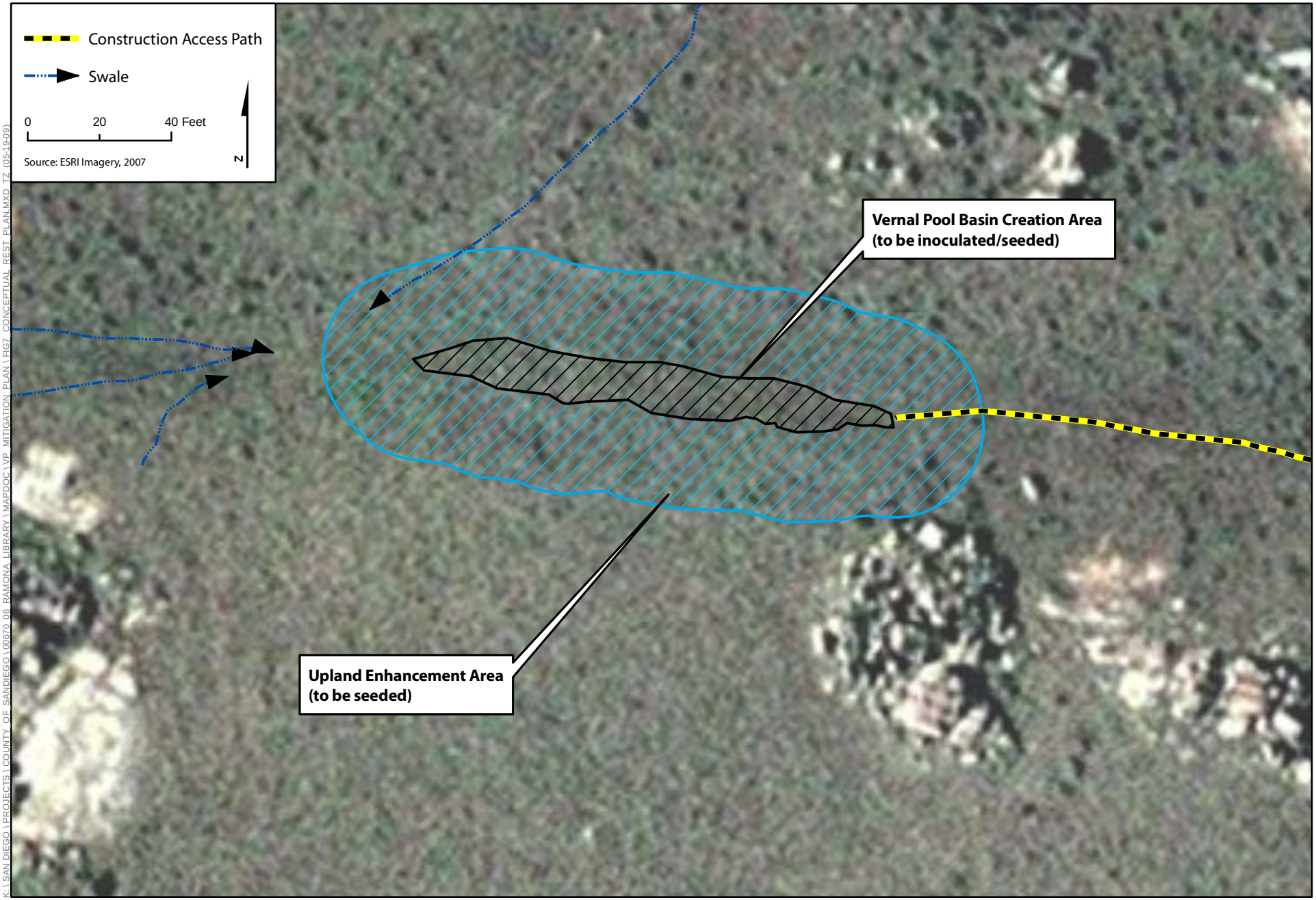

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Figure 7
Conceptual Restoration Plan

4.1.2 Microtopographic Analysis and Engineering

Microtopographic analysis will be conducted on the proposed vernal pool creation site upon acceptance of this conceptual plan by the resource agencies. A detailed topographic survey will be conducted including spot elevations of the watershed high and low points, and a data map of the proposed mitigation pool area and immediate watershed area will be produced with no less than 0.1 foot contour intervals. This map will be used to conduct a basic hydrologic analysis for the proposed vernal pool creation area and inform the final landscape grading design. The results of this analysis will determine the ultimate pool shape, length and depth. No significant change from the concept plan shown Figure 7 is anticipated.

4.1.3 Soil Testing

Separate soil samples were collected by ICF Jones & Stokes in March 2009 that will be tested for texture, half-saturation percentage, percent organic matter, pH, electrical conductivity (ECe), sodium adsorption ratio (SAR), and major and minor essential nutrients consistent with the IHMP. The soil test results will be used to confirm that the vernal pool creation area soil is suitable for plant establishment and to identify any soil mineral concentrations that may be too low or too high to adequately support establishment of the anticipated vegetation communities.

4.1.4 Landscape Design Plans

Following approval of this conceptual mitigation plan, a set of landscape construction documents including planting plans, irrigation plans, and details and specifications suitable for bidding and construction shall be prepared by an ICF Jones & Stokes registered landscape architect to implement the conceptual guidelines for the creation and enhancement program outlined in this document. These landscape construction plans shall be submitted to the County of San Diego and the resource agencies as a condition of project approval. Upon approval of the landscape construction documents by the County and the resource agencies, the plans shall be implemented through coordination with the Project Biologist, Landscape Architect, Habitat Restoration Contractor, and plant seed material suppliers. Note that the contracting seed collectors will be given the maximum possible lead time to collect (and store, if required) seeds from the specified plants within donor sites in the preserve area.

4.2 Mitigation Responsibilities

For proper implementation of the restoration as outlined in this plan, specific qualifications and experience are required. The project team would include a Habitat Restoration Specialist, a Project Biologist, and a Habitat Restoration Contractor. The restoration effort would be led by the Habitat Restoration Specialist. The Habitat Restoration Specialist is responsible for successful implementation of this plan by the implementation team by providing direction, technical expertise, and coordination. The Habitat Restoration Specialist would direct the work of the contractor implementing this plan. This section outlines the specific qualifications and responsibilities.

The Habitat Restoration Specialist should have at minimum education and experience qualifications including: 1) A Bachelor of Science degree in agricultural or biological sciences, or environmental design; and 2) At least five years experience working with local southern California habitat restoration projects, with an emphasis on coastal sage scrub, native perennial grassland, wetlands, and vernal pools.

The Project Biologist should have at minimum education and experience qualifications including: 1) Bachelor of Science degree in biology, ecology, or botany; 2) At least five years of local field experience with vernal pool vegetation, hydrology, and soils; 3) A current USFWS Section 10(a)1(A) take permit for San Diego fairy shrimp; 4) USFWS authorization (either Section 10(a)1(A) take permit, or authorized through Section 7 for this project) and documented experience to collect inoculum containing such listed species as San Diego button celery and spreading navarretia, or equivalent, provided collection of these species is permitted for this project; and 5) A current CDFG sensitive species collection permit.

The Habitat Restoration Contractor should have at a minimum experience qualifications including: 1) Hold a current California C-27 landscape contractor's license; 2) Specific documented experience with the micro-topographic grading to create pools, and the installation of vernal pool projects in San Diego County, as well as native upland restoration projects; and 3) Demonstrated experience in maintaining vernal pool and upland habitat restoration projects.

A preconstruction meeting will be held with all applicable individuals to establish relative authority and responsibilities regarding protection and restoration of biological resources. The Habitat Restoration Specialist shall hold the authority to make field changes that affect the scope of work of the project and to issue stop work orders. A schedule identifying proposed construction activities, work area boundaries, off-limit areas and activities, and applicable permits will be distributed to all appropriate parties prior to commencing construction.

4.3 Mitigation Site Installation

4.3.1 Vernal Pool Site Preparation and Grading

Clearing and grubbing shall occur during early fall, outside of the bird breeding season and when the site is dry (after August 15 or later). Prior to clearing and grubbing, native plants to be preserved in place would be marked, and native plant material to be salvaged shall be salvaged. Clearing and grubbing shall be performed within designated areas only as indicated on the grading plan, unless otherwise determined by the Habitat Restoration Specialist. Clearing and grubbing shall consist of clearing all vegetation, primarily non-native grasses and other weeds, and scraping the soil surface within the limits of disturbance. Clearing and grubbing shall occur prior to grading and planting.

Excavation to create the vernal pool basin shall occur during the summer or fall months when the site soil is likely dry. All excavation shall be conducted by hand, with shovels, picks, and rakes used to remove existing vegetation and excavate site soils and wheelbarrows used to move the excavated soil to the south boundary of the new pool where the excavated soil will be deposited to from a low-lying berm. The soil cut and fill would be balanced on site so that no soil import or export is required. Note that approximately 24 cubic yards of native soil material are anticipated to be excavated from the pool basin, and deposited within the adjacent upland enhancement area along the southern boundary of the pool basin. No water shall be used for the final placement of soil and salvaged vernal pool topsoil.

The Habitat Restoration Specialist would direct the Habitat Restoration Contractor performing the vernal pool grading and upland enhancement. Minor modifications to the grading plan may be necessary in the field. The restoration specialist shall monitor and approve the vernal pool grading, and must approve any field changes. The new vernal pool shall be surveyed to verify compliance with the grading plans and that it is of adequate size and depth to meet mitigation requirements.

4.3.2 Vernal Pool Inoculation

Soil assumed to be containing cysts of San Diego fairy shrimp from the selected pools to be impacted on the Ramona Library Project site will be excavated and salvaged. The salvaged topsoil shall be placed in the newly created vernal pool basin as the final step in establishing the finish grade. The depth of the salvaged topsoil will be dependent on the amount of material salvaged in relation to the amount of area being created.

4.3.3 Vernal Pool Seeding/Planting Plan

The vernal pools and surrounding upland are currently dominated by non-native grasses and herbs. The vernal pool being created will be seeded with material collected from the vernal pools to be lost due to project construction as well as authorized donor pools from the preserve. Salvage of the vernal pools to be lost due to project construction would provide one vernal pool plant species for translocation to the newly created pool, grass poly. To enhance the created vernal pool, ICF Jones & Stokes believes it would be desirable to collect seed from additional vernal pool species provided an agreement is reached with the resource agencies and DGS for a donor pool collection. Seed from any potential donor pools would be collected directly from the plants at the appropriate time of year, or alternatively, may be collected by removing the organic debris on the pool surface and up to the upper half-inch of soil from two-inch square areas within the donor pools. To maintain the viability of the donor pools, no more than five percent of the surface area of a donor pool would be collected. Some of the potential species that might be planted in the vernal pools are shown in Table 2.

Table 2. Potential Vernal Pool Species for Collection and Seeding in the Ramona Library Project Mitigation Area

Vernal Pool Species[1]	
Scientific Name	Common Name
Callitriche marginata	water-starwort
Deschampsia danthonioides	annual hairgrass
Eryngium aristulatum var. *parishii*	San Diego button-celery
Myosurus minimus var. *apus*	little mouse-tail
Navarretia fossalis	San Diego navarretia
Orcuttia californica	California orcutt grass

[1] Plant species requiring special collection from suitable donor pools approved by the resource agencies.

4.3.4 Upland Enhancement Area Site Preparation

Once vernal pool grading operations have been completed, the upland enhancement areas outside the newly created and preserved vernal pool watersheds will be cleared of vegetation manually as described above in Section 4.3.1.

4.3.5 Upland Enhancement Area Seeding Plan

Seeding at the mitigation site will be completed between September and April to take advantage of favorable weather conditions and the growing season for these species. The upland enhancement

seed mix approved by the Habitat Restoration Specialist shall be applied by hand to the enhancement areas following intensive hand weeding and/or recontouring with rakes. Seeds shall be mixed into a larger volume of sand before sowing to encourage even distribution across the site. The native grassland seed list is shown in Table 3 below.

Table 3.[1] Native Grassland (Vernal Pool Watershed) Dry-Spread Seed Mix[2]

Scientific Name	Pounds per Acre	Minimum Percent Purity[3]	Minimum Percent Germination[3]	Lbs. of Viable Seed Per Acre[4]
Bromus carinatus	2	95	80	9.12
Castilleja exserta	2	50	50	0.50
Gnaphalium californicum	3	10	25	0.08
Hemizonia fasciculata	2	10	25	0.05
Lupinus bicolor	3	98	80	2.16
Nassella pulchra	10	70	60	4.20
Sisyrinchium bellum	2	95	70	2.66
Trifolium albopurpurem	4	90	60	4.32

[1] Based on Vernal Pool Concept Plan in IHMP for Ramona Airport Preserve, Appendix C (FAA 2000)

[2] Seed shall be collected from the Ramona Airport property to the extent possible. Any commercial seed obtained for the project must originate in San Diego County.

[3] Estimated

[4] The pounds per acre of seed to be applied shall be adjusted to achieve the specified pounds per acre of viable seed when actual percent purity and germination figures are calculated.

4.3.6 Irrigation Plan

No irrigation is proposed for the vernal pool creation area or the adjacent upland areas to be enhanced. Instead, the timing of the site preparation and inoculation/seeding will be carefully controlled to correspond to the beginning of the rainy season in San Diego, which generally begins in October and extends through April annually. Supplemental watering by hose from a water truck would be possible on the proposed mitigation area, but would only be implemented in a period of extreme drought early in the establishment period of the proposed mitigation site (e.g., first two years with below average rainfall or documented drought conditions and lack of plant establishment on the project site) under the direction of the Habitat Restoration Specialist.

4.3.7 Mitigation Site Protection

The mitigation site boundaries will be marked with pin flags prior to construction but will not be fenced during construction to ensure that wildlife usage of the site or passage through the area is possible during the construction period. Temporary wire fencing on t-posts consistent with the fencing specification in the IHMP (FAA 2000) shall be placed around the vernal pool creation area after completion of the installation if it is determined that grazing will occur within the lease expansion area in which the project occurs. If it is determined that grazing is not anticipated to occur within or adjacent to the proposed mitigation area, fencing will not be installed around the mitigation site. Because the mitigation will occur within an existing preserve area on Ramona Airport property, no signage will be installed.

4.4 As-built Conditions

The County of San Diego DGS shall submit a report to USACE, USFWS and RWQCB within six weeks of completion of the installation, describing the as-built conditions of the mitigation site. The report shall include a marked-up duplicate copy of the grading/planting plan drawing showing the mitigation area and any field modifications to the location of any of the approved project features. Photographs will also be included to document the final field conditions.

5.0 Mitigation Maintenance Plan

Maintenance of the vernal pool preserve would be provided regularly throughout the five-year maintenance and monitoring period for the restoration site, as directed by this plan and the Habitat Restoration Specialist. The purpose of the maintenance program is to provide guidelines for maintenance of the created and enhanced areas. The Habitat Restoration Specialist shall direct the Habitat Restoration Contractor's maintenance activities in the mitigation area.

5.1 Anticipated Mitigation Schedule

Table 4. Draft Ramona Library Mitigation Schedule

Date Range	Task
Pre-Construction Tasks	
May–October, 2009	Preparation of Final Landscape Construction Plans
August/September 2009	Receive Library Project Permits
September/October, 2009	Salvage Soils/Cysts/Plants/Seeds from Impacted Vernal Pools
June 2009–2012	Collection of Native Plant Seeds from Donor Pools
December 2010	Mitigation Pre-Construction On-Site Meeting
Construction Tasks	
December 2010	Mitigation Area Flagging, Site Preparation, Grubbing, Grading
December 2010	Hydrologic Evaluation and Field Grading Adjustments
January 2010	Inoculation and Seeding
Post-Construction Tasks	
May 2010	120-Day Establishment Period Ends
January 2010—January 2015	Long-Term Maintenance and Monitoring
January 2011, 2012, 2013, 2014, 2015	Annual Reporting
Remedial Maintenance Actions	
January 2010–January 2015	As Required to Provide Successful Mitigation

5.2 Mitigation Maintenance

5.2.1 Installation Maintenance Period

Once the Habitat Restoration Specialist has certified the mitigation installation is in substantial conformance with the landscape construction plans, the project maintenance and monitoring period

shall begin. The landscape contractor implementing the mitigation installation shall be responsible for maintenance during the 120-day establishment period. The installation contractor or a landscape maintenance contractor shall then be selected by the County of San Diego for the remainder of the five-year maintenance and monitoring period.

5.2.2 120-Day Establishment Maintenance Period

The landscape installation contractor shall meet with the Habitat Restoration Specialist monthly to inspect the site. The establishment monitoring period shall last for 120 days, or until the installation contractor has satisfactorily completed all the required maintenance measures. If there are outstanding maintenance items at the end of 120 days, the installation contractor shall be responsible for maintaining the site until all items have been satisfactorily completed. Upon successful completion of the 120-day establishment maintenance period, the long-term maintenance period shall begin.

5.2.3 Five-Year Long-Term Maintenance Period

Once the 120-day establishment period has been successfully completed, the landscape maintenance contractor shall provide maintenance for the remainder of the five-year monitoring period at a minimum of regular quarterly intervals. The contractor shall coordinate with the Habitat Restoration Specialist and complete maintenance activities and remedial measures as required. In general, it is anticipated that maintenance activities will occur monthly for the first year after site installation and at quarterly intervals through the remainder of the five-year mitigation maintenance period.

5.3 Maintenance/Remedial Activities

Required maintenance activities for the plan are anticipated to be limited to non-native plant removal at monthly intervals during the first year after project installation, and at least every other month during the second year after mitigation installation. Non-native plant removal is anticipated to be conducted a minimum of quarterly for the remainder of the five-year maintenance and monitoring period. Remedial actions may include pool recontouring, inoculation, reseeding, or hand watering as described below and are only anticipated to be completed if directed by the Habitat Restoration Specialist to remedy a verified short-coming identified in an annual report through qualitative and quantitative monitoring.

5.3.1 Non-Native Plant Removal

Non-native plant control shall be performed within the vernal pool basin under the direction of the Habitat Restoration Specialist and on annual or perennial invasive exotic species that are known to be present within the swale area. The sole means of non-native plant control within the mitigation area shall be physical including hand removal, mowing, or solarization. No herbicide shall be applied in the vernal pool or within the adjacent upland enhancement area.

Non-native plant species are anticipated to be the primary problem in the vernal pool preserve area. During the 120-day plant establishment period and for the remainder of the five-year maintenance period, the site shall be kept free of the invasive exotic weed species listed in the Cal IPC list and other weed species will be controlled under the direction of the Habitat Restoration Specialist. Annual weed species present in the mitigation area prior to implementation that would likely

require control include filaree (*Erodium* spp.), short-pod mustard (*Hirschfeldia incana*), Asian bent grass (*Agrostis avenacea*), garland chrysanthemum (*Chrysanthemum coronarium*), tocolate (*Centaria melitensis*), African brass buttons (*Cotula coronopifolia*), common cocklebur (*Xanthium strumarium*), and non-native grasses including (*Agrostis avenacea*, *Avena barbata, Brachypodium distachyon, Bromus species, Hordeum murinum, Lolium perenne, Polypogon monspeliensis, Vulpia myuros*). Other weed species that may invade the mitigation area and require control will be identified as required by Habitat Restoration Specialist.

Non-native grasses and other exotic weed species currently dominate the majority of the existing vernal pool creation area and surrounding uplands at the project site, and are anticipated to be a permanent presence at the mitigation site and a competitive challenge in establishing native species in the vernal pool. Non-Native plants are anticipated to be reduced in dominance, but not be eliminated from the site by the end of the five-year mitigation maintenance period.

5.3.2 Remedial Pool Contouring

Recontouring of the vernal pool basin would occur if initial grading failed to restore the anticipated vernal pool hydrology, and would be implemented in selected portions of the pool after the initial mitigation installation. The grading would be completed by hand during the dry season, would be limited to the minimum disturbance area required, and would be completed only if required to successfully complete mitigation as directed by the Habitat Restoration Specialist.

5.3.3 Remedial Inoculation

Remedial inoculation of the pool would occur if Years 3 and 4 faunal surveys fail to detect the presence of San Diego fairy shrimp in the created pool. The inoculation would be completed at the end of the dry season with material from an agency approved donor pool located in the preserve.

5.3.4 Remedial Seeding

Remedial seeding may occur in the vernal pool basin and/or the adjacent upland under the direction of the Habitat Restoration Specialist. The seeding would be completed with material collected from the preserve within donor pools and upland watershed areas.

5.3.5 Remedial Watering

Supplemental watering by hose from a water truck will only be implemented in a period of extreme drought early in the establishment period of the proposed mitigation site (Years 1 and 2 with below average rainfall or documented drought conditions and lack of plant establishment on the project site) under the direction of the Habitat Restoration Specialist.

6.0 Long Term Monitoring Plan

The primary goal of the monitoring plan is to create a San Diego grassland hardpan vernal pool equal to or better than those lost by development. Selected existing preserved vernal pools shall serve as reference pools for comparison purposes. The monitoring plan would also measure how well the upland enhancement program is replacing weeds and grasses with native grass and Diegan coastal sage scrub species. Monitoring must extend for a minimum of five years after completion of

the mitigation installation, or until the performance criteria described below have been met successfully, whichever comes first.

6.1 Performance Criteria

6.1.1 Vernal Pool Performance Criteria

The proposed mitigation performance criteria are consistent with those presented in the IHMP, the project BA (TAIC 2008) and studies of vernal pool mitigation success (De Weese 1996). The performance criteria include both quantitative and qualitative measures with an emphasis on vernal pool hydrology and achievement of vernal pool plant associations similar to the conditions of the reference pools in the preserve. At the completion of each annual precipitation season within the five-year monitoring period, the site hydrology and plant species cover and diversity will be evaluated to determine the likelihood of adequate establishment and achievement of the performance criteria. The assessment of the created vernal pools will be based on a comparison of the data ranges collected from a two selected reference pools from the preserve, that are similar in shape and function (e.g. swale pool) to the created pool. The following target performance criteria are guidelines to assess the success of the created vernal pool:

1. Level and length of inundation within the created pool should be similar to that of the reference pools within similar areas of the preserve.
2. At least one vernal pool plant species should be present in the vernal pool for at least two rainy seasons for the pool to be considered successful.
3. Plant species diversity and cover should be similar in composition to the reference pools within similar areas of the preserve.
4. Fairy shrimp or cysts should be present for at least one rainy season in the created vernal pool, indicating potential successful reproduction on the project site.
5. No perennial, invasive, exotic plant species shall be allowed to become established in the created vernal pool.

6.1.2 Upland Enhancement Area Performance Criteria

Quantitative botanical and horticultural monitoring will be conducted similar to that for the vernal pool basin monitoring and will be used to evaluate the success of the upland enhancement areas on the mitigation site over the five-year mitigation monitoring period. The upland enhancement areas shall support at least 50 percent cover of native grass, herb, and shrub species at the end of the 5-Year mitigation monitoring period with no more than 25 percent total shrub cover. Native plant species richness shall be no less than five native species located within the adjacent upland areas that have not been enhanced.

6.2 Monitoring Methods

The following methods shall be utilized to measure annual establishment of the mitigation area and determine that performance criteria are being achieved. Hydrology monitoring will focus on determining that the created pool is functioning as intended and will be completed during Year 1 of the project monitoring period and may be extended to Year 2 if deemed necessary by the Habitat Restoration Biologist. Qualitative vernal pool floral monitoring will be completed at regular

quarterly intervals throughout the 5-year mitigation monitoring period, with quantitative monitoring completed once annually in the spring. Quantitative vernal pool faunal sampling will be conducted in winter/spring beginning in Year 1 of the project and will be discontinued once fairy shrimp have been collected from the pool and identified.

6.2.1 Vernal Pool Hydrology

A total of three monitoring activities shall be conducted for the created vernal pool in the preserve area each year for the entire five-year monitoring program including:

1. Placement of a rain gauge at the site and reading of the precipitation amount during each scheduled quarterly site monitoring visit. The rain gauge shall be installed and used for the entire five-year monitoring period to more accurately track precipitation and its correlation to the yearly fluctuations in the vegetation and faunal data.
2. Measurement of maximum water depth in each pool. Water depth shall be measured and recorded during each scheduled quarterly site monitoring visit. Water depth data shall be collected for the entire five-year monitoring period.
3. GPS mapping of the high water ponding extents during the first year shall be conducted for the creation pool to model pool response to the established hydrology pattern and determine if remedial pool contouring measures are required. This monitoring measure may be repeated in Year 2 if directed by the Habitat Restoration Specialist.

6.2.2 Vernal Pool Flora

The botanical monitoring element for the vernal pool component of the project includes floral surveys for pool species composition, vegetation transects for percent vegetative cover and plant species frequencies, and whole pool estimates of percent cover for plant species (e.g., upland, emergent wetland, and vernal pool species) and for overall vegetative cover.

Each of the three types of data shall be collected for the pre-mitigation baseline data set. The same methods and transect locations shall be used each year for the five-year monitoring period or until the restoration has proven successful. For purposes of monitoring or sampling, the vernal pool is defined as the area within the topographic line that corresponds to the high water elevation when the basin contains its maximum potential volume of water. This area shall be surveyed each year regardless of the pools water volume including:

1. Species composition shall be determined for the created vernal pool and the existing reference vernal pools in the preserve. Monitoring will include an assessment each year to detect vernal pool indicator species, with the timing dependent on the seasonal weather conditions each monitoring year.
2. Quantitative transect sampling will be conducted once annually in the spring of each year and provide data on percent vegetative cover and plant species frequencies for the reference pools and the created pool. Permanent transects will be established from pool edge to pool edge through the deepest portion of the pool. The transect will be marked with rebar stakes at both ends, and one-decimeter-squared (dm^2) quadrats will be used to sample every 0.5 meter along the transect. Percent vegetative cover shall be recorded for the quadrat. Presence and percent cover will be recorded for plant species within each quadrat to determine cover for each species along the transect line.

3. Qualitative estimates of cover, distribution, and abundance of plant species shall be made for the created vernal pool during the summer, fall and winter quarterly monitoring visits. The codes for the cover and distribution sampling of plant species are shown in Table 5 below.

Table 5. Codes for Cover/Distribution Sampling of Plant Species

Code	Percent Cover	Distribution	Abundance
1	0-5	Solitary	1-25
2	5-25	Clumps/Groups	26-50
3	25-50	Patches/Cushions	51-100
4	50-75	Carpets/Numerous Colonies	101-500
5	>75	+/- Pure Stands	>500

Note: A plant with a code of 2-1-5 would have 5 to 25 percent cover in the pool, plants distributed solitarily, and an estimated abundance of over 500 individuals.

6.2.3 Vernal Pool Fauna

The Project Biologist will sample for fairy shrimp within the created vernal pool beginning two weeks after the first significant rainfall event after project installation (precipitation exceeding 0.5 inch) and continuing as appropriate during the rainy season to collect and identify any fairy shrimp species that may be present. Once fairy shrimp have been detected in the pool and identified, faunal sampling will be discontinued.

Aquatic invertebrates will be sampled, in accordance with USFWS guidelines by the Project Biologist, who must have a valid 10(a) permit, during the rainy season in the created vernal pool to determine the presence/absence of sensitive fairy shrimp species. The pool will be sampled for fairy shrimp using variously sized dip-nets of known aperture depending on the depth and size of the pool. The net will be dropped vertically into the pool, pushed horizontally for a known distance, and then quickly removed vertically. The depth to which the net is submerged shall be noted and, in this way, the volume of water sampled could be calculated. Three 1-meter samples will be taken where possible. Sampled organisms will be transferred into 100 percent alcohol in 2-dram glass vials. Alcohol is used such that, after the algae in the sample burst, the concentration of the solution is about 70 percent. The pH, temperature, turbidity, and approximate size and depth of the pools will also be determined. The analysis of the samples will include separating animals from algae and debris, mixing and diluting samples, observing collected specimens under a microscope, sorting animals to order, obtaining approximate densities of organisms in samples, and identifying fairy shrimp to species level.

6.2.4 Upland Enhancement Area Monitoring

The botanical monitoring component for the upland enhancement areas of the mitigation project includes floral surveys for species composition, and vegetation transects for percent vegetative cover and plant species frequencies. The data shall be collected for the pre-mitigation baseline data set and the same methods and transect locations shall be used each year for the five-year monitoring period or until the restoration has proven successful including:

1. Quantitative transect sampling will provide data on percent vegetative cover and plant species frequencies in upland areas of the watershed. Permanent 10-meter (10m) transects will be

established and marked with rebar stakes at both ends, and one-meter-squared (m^2) quadrats will be used to sample every 0.5 meter along the transect. Percent vegetative cover shall be recorded for the quadrat. Species presence and percent cover will be recorded for plant species within each quadrat to determine cover, and species richness will be recorded by identifying all plant species present on the transect.

6.2.5 Photo Documentation

Photo documentation of the created and reference vernal pools will be used to help document habitat quality and plant cover. Additional photo view points shall be established in the upland enhancement area to document upland establishment and give an overview of site conditions. Permanent photo views will be established at each vegetation transect location and at each reference pool. The photographs will be oriented down the length of the transect line, and the pools will be photographed a minimum of two times annually from the same vantage point when water first ponds in the created pool or on January 31, whichever comes first and near the drying point in the annual hydrologic cycle or when whole-pool qualitative floral monitoring is completed in May, whichever comes first.

6.3 Annual Reports

Annual monitoring reports containing qualitative and quantitative analysis of the mitigation area will be prepared by the County of San Diego DGS on the anniversary date of the project installation annually for five-years. The annual reports to be submitted to the resource agencies will include the names of all persons involved in data collection, report preparation and contain all applicable project agreement and permit numbers. The reports shall include at minimum:

- A summary of the qualitative and quantitative monitoring results for the year.
- A comparison of the mitigation pool hydrology, flora and fauna with the reference sites.
- A comparison of the project performance criteria with the observed field conditions.
- A summary of any maintenance activities performed during the year.
- A list of any remedial measures necessary for the successful completion of the project.
- Photos of the mitigation site.

7.0 Completion of Mitigation

7.1 Contingency Measure Initiating Procedures

In the event that an annual performance standard is not achieved for all or a portion of the mitigation area during the five-year monitoring period, or if the final success standards are not achieved, the County of San Diego would submit to the resource agencies an analysis of the deficiency and the anticipated causes. If required by the resource agencies, the County of San Diego would propose additional remedial action. The monitoring period would be extended if the restoration site has not reached the final success standards by the end of the five year period and would continue until such time as the resource agencies confirm completion of the mitigation project.

7.2 Funding Mechanisms

The County of San Diego shall be responsible for funding contingency mitigation measures, if necessary, until the resource agencies confirm completion of the vernal pool mitigation program. Once the mitigation obligations have been met, the resource agencies shall release the County of San Diego from their five-year maintenance and monitoring obligation and the mitigation site would be incorporated into the Ramona Airport Vernal Pool Management Plan and IHMP.

7.3 Notification of Completion

Upon completion of the five-year maintenance and monitoring period, if the target performance criteria have been achieved or exceeded, notification of completion would be included within the final annual report and request for release from the permit conditions and bonding requirements would be requested from the resource agencies. The final report also would provide quantitative data establishing that the vernal pool creation and preservation criteria have been met in conformance with this monitoring plan.

7.4 Resource Agency Concurrence

After receiving the final annual report, the resource agencies may make a site visit, at their discretion, to confirm the mitigation project has been successfully complete. The resource agencies shall then release the County of San Diego from the permit and bonding requirements.

7.5 Long-Term Management

Long-term maintenance will be performed in perpetuity by the County of San Diego Department of General Services. Long-term management guidelines are presented in the Ramona Airport Vernal Pool Management Plan and IHMP, provided under separate cover. The Vernal Pool Management Plan and IHMP specify control methods for non-native and invasive plant species in the vernal pool preserve as well as other maintenance methods and limitations, grazing plans and leases, and fencing specifications and locations within the preserve.

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